City of Beaverton 2009 Water Quality Report

Your Water Is Our First Priority

The City of Beaverton is pleased to present you with this 2009 Water Quality Report. The purpose of the report is:

To provide you with information about your drinking water and comply with the reporting requirements of the U.S. Environmental Protection Agency (EPA), Consumer Confidence Report Rule, 40 CFR, Part 141, Subpart O.

Using data collected in 2009, this report summarizes information about your water supply sources, the water system facilities that deliver water to your tap, and the quality of your drinking water. Also included is information about programs underway that are helping to ensure you have safe and dependable drinking water.

The City of Beaverton is proud of the high quality of our water supply, which meets or exceeds state and federal water quality requirements. If you have any questions regarding your water quality or about information presented in this report, please call us at (503) 350-4017.

Si Habla Español: Este informe contiene información muy importante. Tradúscalo ó hable con un amigo quien lo entienda bien.

Information in this report is available upon request in alternative formats by calling the City of Beaverton's **Water Quality Report Hotline** at **(503) 350-4017**.

City of Beaverton's web site home page: **www.beavertonoregon.gov**

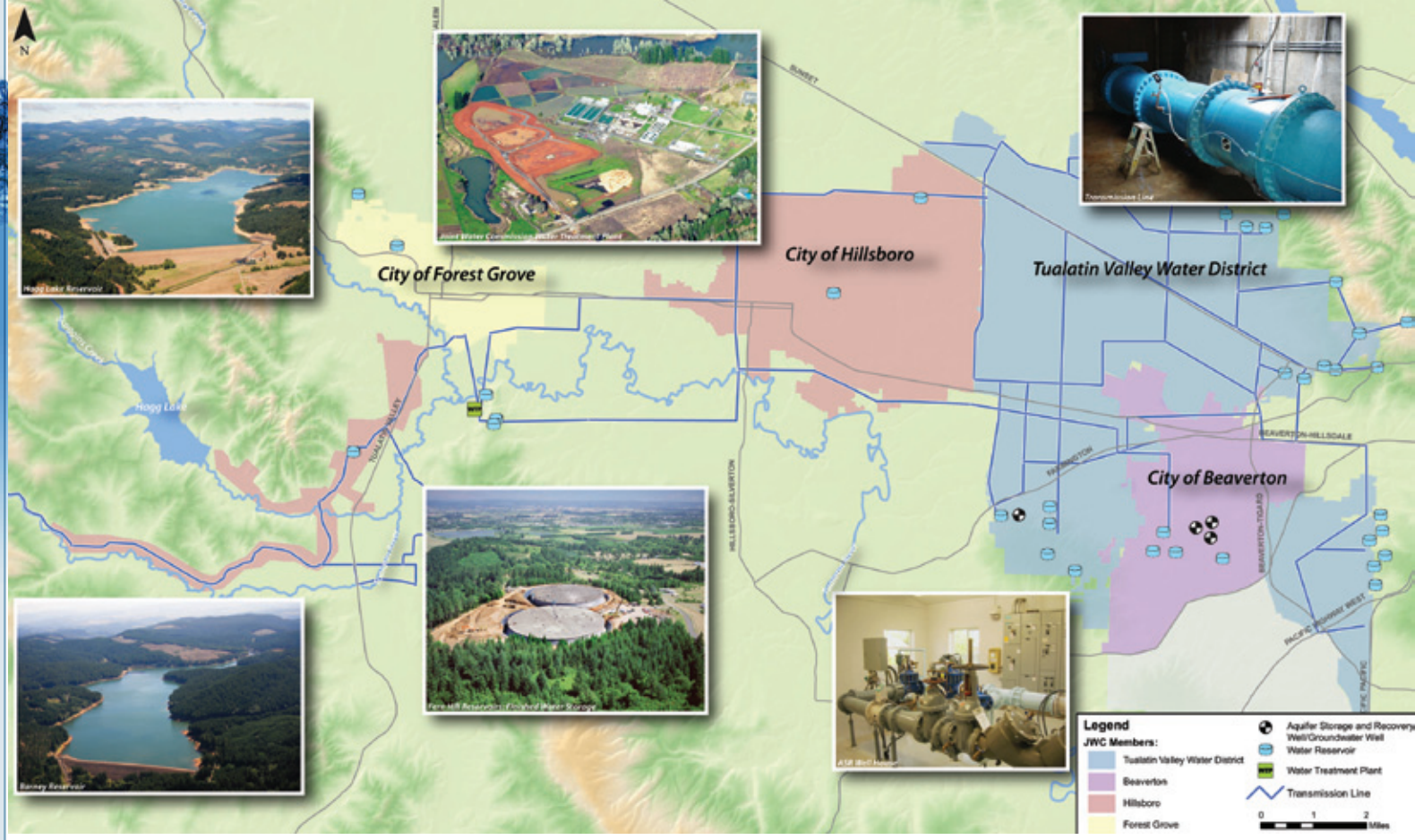
City's web page for Water Quality Report: **http://www.beavertonoregon.gov/departments/publicworks/Utilities/waterqualityreport.aspx**

Water Quality Testing

The City is committed to providing safe drinking water to its water consumers. The City collects an average of 126 samples per month (1,533 samples per year) for testing by a state-certified laboratory to ensure that the City's drinking water meets state and federal drinking water standards. A table summarizing 2009 water quality data is provided at the end of this report.

For a fee, private laboratories will test your tap water for lead and other substances. Not all labs are certified to test for all contaminants. For information regarding water quality testing, consult the Oregon Drinking Water Program's web site. Download a complete list of all laboratories certified by the Oregon Department of Human Services at the web site below. You will need the FREE Adobe Acrobat Reader to view these files.

► *http://oregon.gov/DHS/ph/dwp/docs/labList.pdf*



Beaverton's Drinking Water Sources

The primary source of filtered drinking water in Beaverton's service area is the Joint Water Commission (JWC) water treatment plant located south of Forest Grove. The water treatment plant filters surface water pumped from the nearby upper Tualatin River. The JWC water treatment plant can produce up to 75 million gallons a day (mgd) of finished drinking water. The City owns a 25 percent share in the water treatment plant, allowing the City to use up to 18.75 mgd of treated water.

The City is a member of the JWC, which is an intergovernmental water supply group whose owner-members are the Cities of Beaverton, Hillsboro, and Forest Grove, and the Tualatin Valley Water District. The JWC was formed to store, manage, treat, and convey drinking water for the owner-member agencies and supplies water to as many as 400,000 people.

During the summer, when drinking water demand is high and Tualatin River streamflow is low, water is released from Hagg Lake (Scoggins Reservoir) and Barney Reservoir (formed behind a dam on the Trask River in the Coast Range) to compensate for the amount removed from the Tualatin River for Beaverton's summer use. Water released from Barney Reservoir is diverted by pipes from the Trask River basin into the upper Tualatin River.

The City of Beaverton owns water rights, which allow use of up to 1.3 billion gallons (4,000 acre-feet) in Scoggins Reservoir and 1.4 billion gallons (4,300 acre-feet) in Barney Reservoir. Water originating from Scoggins Reservoir and Barney Reservoir is the source of most of the City's raw water (before treatment) during the summer. Release of stored raw water from the two dams increases summertime streamflow in the Tualatin River, helping to sustain a healthy river ecosystem. Every winter and spring, the

Barney Reservoir on the Trask River headwaters

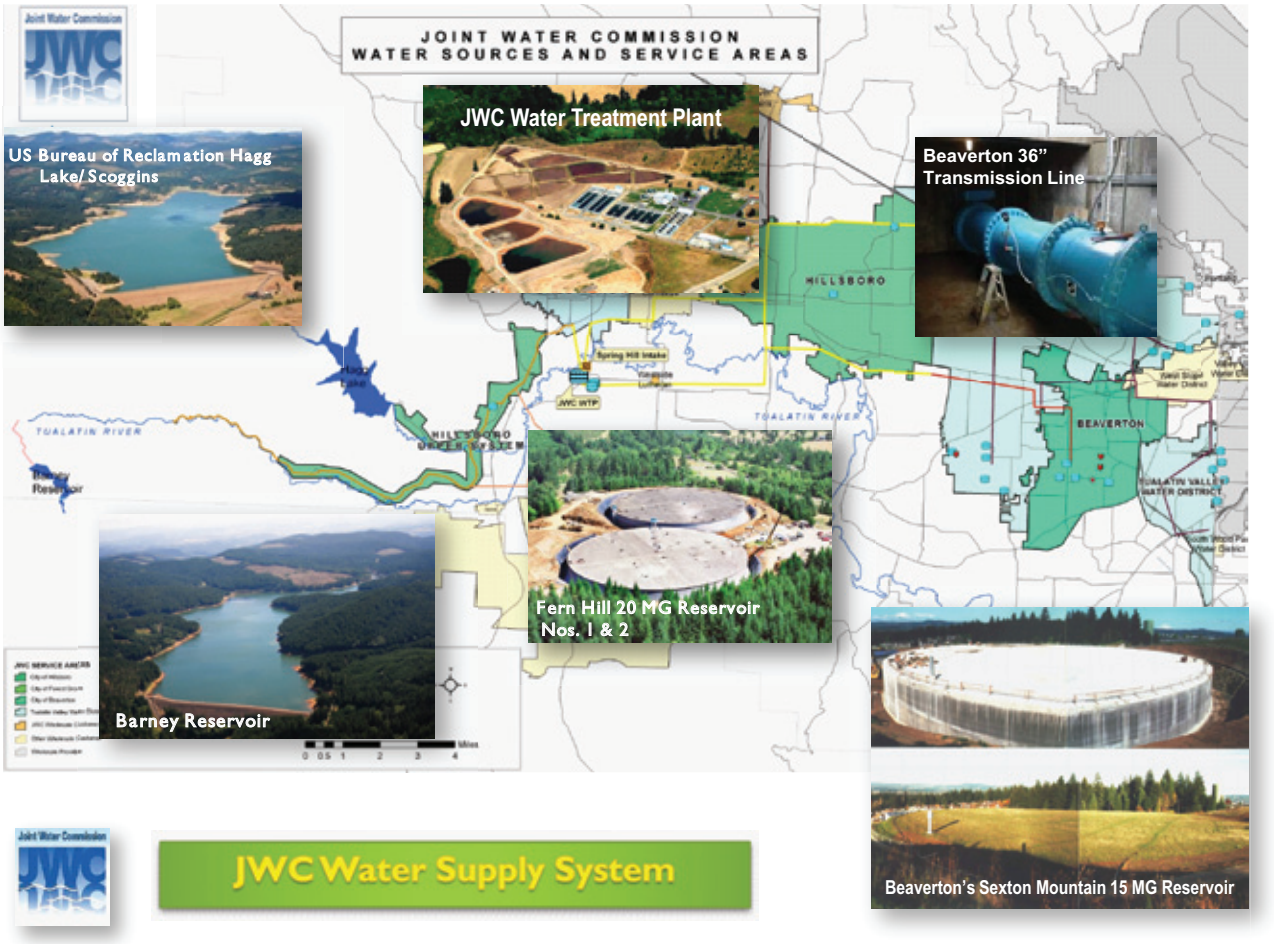
Scoggins Reservoir

City uses its 16 mgd natural streamflow water right to meet daily water supply demands. Surface water from the Tualatin River then is filtered in the JWC water treatment plant before delivery to the City of Beaverton.

Finished drinking water from the JWC water treatment plant is pumped about one-half mile up to the Fern Hill Reservoirs, two above-ground storage reservoirs situated at 520 feet elevation above sea level. To transport water from the JWC water treatment plant to Beaverton, the City owns 14 mgd capacity in the JWC South Transmission Line. From the two Fern Hill Reservoirs, water travels about 20 miles by gravity through large-diameter transmission lines to Beaverton, where the City's two terminal storage reservoirs are located. The two terminal water storage reservoirs in central Beaverton hold a combined total of 20 million gallons (MG) and are owned and operated entirely by the City. The City also owns emergency backup capacity in the parallel JWC North Transmission Line.

Since 1999, the City has used aquifer storage and recovery (ASR) to temporarily delay the purchase of new water supply facilities. During the winter and spring, Beaverton injects treated drinking water from the JWC water treatment plant into natural underground basalt formations (aquifers), displacing native groundwater. During the summer months, treated water is recovered from ASR wells to supplement JWC surface water to help meet peak season demands (up to 17 mgd).

Acting as a water conservation tool, ASR conserves surface water from primary sources (rivers and dams) during environmentally stressful summer months. Beaverton has reduced its diversion of limited summer river streamflow and water stored behind dams by substituting stored water recovered from ASR wells (for more on ASR, see **City of Beaverton ASR** in this report).

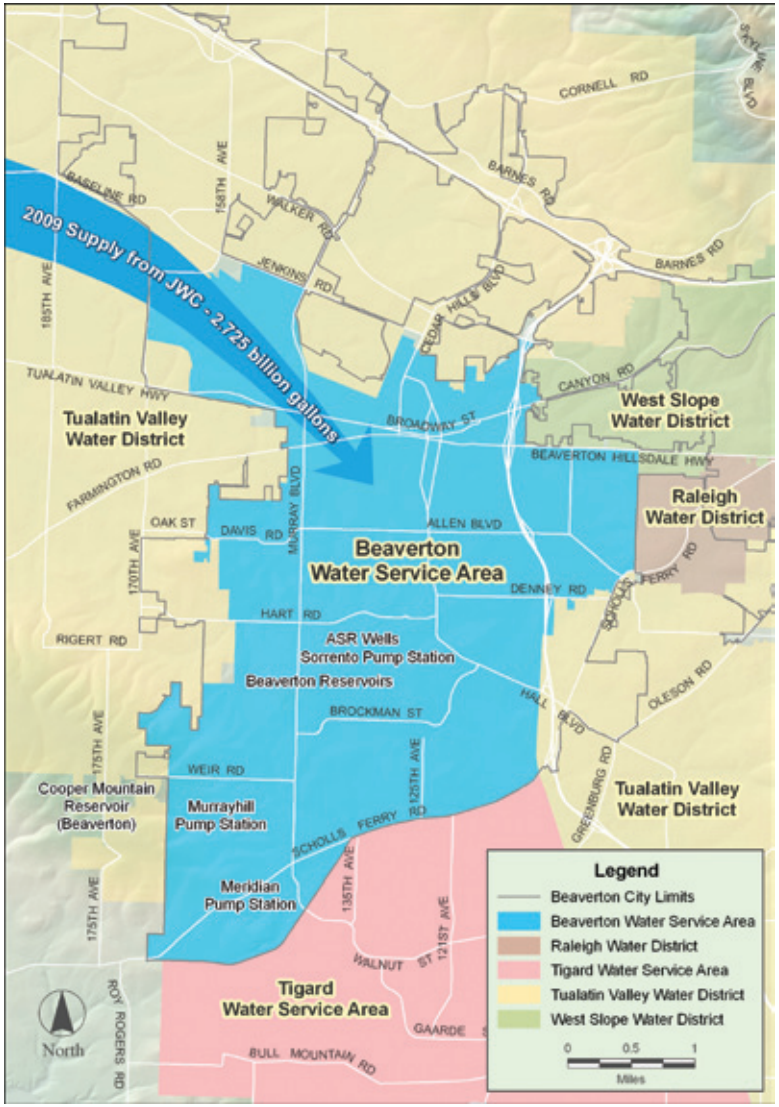


Your City Water System at a Glance

Drinking water is one of the most critical services that the City provides on a daily basis to the residents and businesses of Beaverton. In 2009, the City supplied drinking water to about 70,000 residents, or about 80 percent of the total 86,205 residents who live within the City limits. The remaining 20 percent of our residents' water is supplied by Tualatin Valley Water District, West Slope Water District, and Raleigh Water District.

Following are facts about the City's water system:

- Distribution system includes five local water storage reservoirs, with a combined total storage volume of 28.25 MG.
- The City owns additional reservoir storage of 10 MG near the JWC water treatment plant.
- The City's water distribution system (separate from the JWC supply system) consists of approximately 271 miles of pipe, ranging from 2 inches to 36 inches in diameter.
- In 2009, the City consumed an average of 7.47 mgd or a total of 2.725 billion gallons of water for the year. On July 29, 2009, the City consumed 14.62 MG of drinking water, the highest demand day in 2009.
- The City has a 3- to 4-day supply of stored drinking water in its local in-town reservoirs.
- The distribution system contains four pumping stations that lift water from the largest water service pressure zone on the valley floor to the nine other higher elevation water pressure zones within the City's water service area.
- The City's owned capacity in the JWC water treatment plant is 18.75 mgd.
- The City has an additional water supply of 6 mgd available from ASR wells, commonly used only in the summer.
- In addition to the JWC and ASR wells, there is an emergency supply capacity of 8 mgd available from two adjoining public water providers (Tualatin Valley Water District and the City of Portland).



Water Questions? We Have Answers!

Water Billing Question?
☎ Call 503-526-2257

Water Quality Question?
☎ Call Beth Dolbow at 503-781-0704
Email bdolbow@ci.beaverton.or.us

Water Conservation Question?
☎ Call Debbie Martisak at 503-350-4084
Email dmartisak@ci.beaverton.or.us

Backflow Prevention Question?
☎ Call Ben Rosales at 503-350-4042
Email brosales@ci.beaverton.or.us

Water Pressure Question?
☎ Call Rick Weaver at 503-526-2646
Email rweaver@ci.beaverton.or.us

Future Water Sources Question?
☎ Call David Winship at 503-526-2434
Email dwinship@ci.beaverton.or.us

Water Emergency?
☎ Call 503-526-2220

After-hours Water Emergency?
☎ Call 503-526-2260

► *http://www.beavertonoregon.gov/departments/publicworks/Utilities/*

Tualatin Basin Water Supply Project (TBWSP)

As communities in the Tualatin Basin continue to grow, more water is needed for municipal drinking water and industrial uses. In addition, more water is needed to augment flow in the Tualatin River and its tributaries for water quality.

In the next 20 years, the City of Beaverton and other cities in the Tualatin Basin will need new, safe, and secure water supplies as early 2014 to ensure long-term economic viability, environmental health, and sustainability.

Since 2001, Beaverton has been a partner in the Tualatin Basin Water Supply Project, with Clean Water Services, the Tualatin Valley Water District, and City of Hillsboro. Beaverton has participated financially in the TBWSP feasibility work since signing an agreement in 2001 with the other project partners.

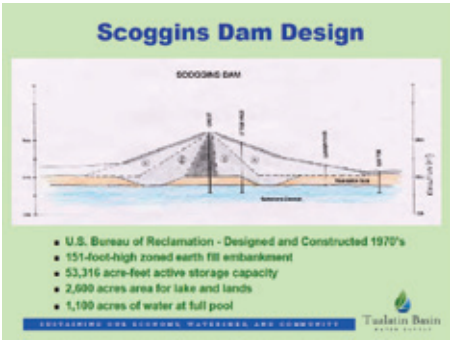
This billion-dollar project in Washington County is a generational investment to build a 50-year water supply source. The project consists of expansion of Scoggins Dam (Hagg Lake) south of Forest Grove, to double the amount of stored water. The existing dam and lake are owned by the U.S. Bureau of Reclamation and operated by the Tualatin Valley Irrigation District. Approximately one half of Beaverton's summer water supply originates from Hagg Lake. The water is treated to meet drinking water standards at a nearby water treatment plant.

The TBWSP is a collaborative effort among local water resources agencies. Besides providing additional supply for municipal water needs, the project will provide environmental benefits and a stable supply for agricultural uses. Clean Water Services is the lead agency for the project, providing project management and public involvement. Project partners include:

- Clean Water Services
- Tualatin Valley Water District (TVWD)
- City of Hillsboro
- City of Forest Grove
- City of Beaverton
- Tualatin Valley Irrigation District (TVID)
- U.S. Bureau of Reclamation (USBR)
- Washington County
- Lake Oswego Corporation

Hagg Lake (Scoggins Reservoir) on Scoggins Creek holds 53,000 acre-feet or 17.3 billion gallons

The TBWSP involves raising the height of Scoggins Dam (which forms Hagg Lake); construction of a large pipeline from the dam to the JWC water treatment plant; a large pumping station located below the dam to pump water from the Tualatin River into the lake during the winter; and expansion of the JWC water treatment plant south of Forest Grove. Scoggins Dam and Hagg Lake are owned by the USBR, which built the facility in



1970. The TBWSP will add approximately 53,000 acre-feet of water to Scoggins Reservoir (Hagg Lake) per year (1 acre-foot is the amount of water it takes to fill an acre of area with 1 foot of water). The City of Beaverton is a partner and has a 3.8 percent interest in the project to eventually own an additional 2,000 acre-feet (0.65 billion gallons). Since 1973 the City has had a contract with the USBR that gives the City a right to use up to 4,000 acre-feet each year (1.3 billion gallons of water).

Following are the expected steps forward on the project during the next year:

- Validation evaluation will be conducted to review 2050 water demand projections and available supply alternatives to confirm TBWSP as the best and most cost-effective future source of supply for the partners.
- USBR will conduct a Corrective Action Alternatives Study to evaluate potential options for seismic upgrades to the existing Scoggins Dam based on current earthquake forecasts.
- Stakeholder meetings to communicate and report to the public the status of the TBWSP.

For more information about the TBWSP go to:

► *http://www.tualatinbasinwatersupply.org/*

Safe Drinking Water Hotline

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA's Safe Drinking Water Hotline (1-800-426-4791).

Regional Water Providers Consortium (RWPC)

The City of Beaverton and other public water purveyors from Multnomah, Clackamas, and Washington Counties are members of the Regional Water Providers Consortium (Consortium). The Consortium provides a forum for collaboration on water supply issues and conducts activities that provide service to customers in and around the Portland metropolitan area.

www.conservh2o.org

The need for regional water supply coordination brought Consortium members together in 1997. Now a volunteer group comprised of 22 water providers in the Portland metropolitan area and the regional government Metro, the Consortium works on critical water supply issues and is committed to being a good steward of our limited water resources.

The Consortium serves as a coordinating organization to improve the planning and management of municipal water supplies in the Portland metropolitan area. The Consortium provides a comprehensive, integrated framework of technical information, regional water conservation, resource strategies, and implementing actions to meet the water supply needs of the Portland metropolitan area to the year 2050.

Participation in the Consortium is voluntary and is funded through membership dues. Water providers retain full authority to manage their individual water systems. The Consortium is made up of a Board, Executive Committee, Technical Committee, Emergency Planning Committee, and Conservation Committee.

Water Conservation – "Back to the Basics"

The Seven Basic Steps to a Water-efficient Landscape.

Water-efficient landscaping uses simple, common-sense gardening practices. Many of these principles have been used in traditional landscaping for years as separate or partially combined principles. The seven basic steps incorporate all of them into one holistic method resulting in a unique landscaping approach.

1. **Planning and Design.** The planning and design of your landscape is one of the most important steps. A thoughtful design can allow you to install your landscape in phases and avoid costly mistakes. Be sure to include the location of existing structures, trees, shrubs, paths or walkways, and important views you want to keep (or eliminate), as well as the sun orientation and the direction of the wind.

   Your yard is made up of numerous microclimates. A microclimate is the climate of a small area that is different from the areas around it. It is important to note these areas in your plan.

   You may want to begin by dividing your yard into four different light exposures — north, south, east, and west. You can then identify specific types of plants you want to incorporate into your landscape.

2. **Compost and Cultivate.** Soil improvements are very important to water-efficient landscaping. Understanding the basic characteristics of your soil is key for plant selection and watering practices. A productive soil provides physical support, water, air, and nutrients to plants as well as soil-dwelling organisms. Roots and soil organisms breathe just as we do and require sufficient air and water to live. As a result, a good soil is not "solid," instead between 40 and 60 percent of the soil volume is pores.

   One of the easiest ways to improve the soil and create a better environment for your plants is to amend your soil with compost and organic matter. Working amendments into soil will help to alleviate compaction problems and improve the ability of the soil to accept and store water. Adding organic matter also will increase the activity and the number of soil organisms.

   Over time, a well-amended soil will supply more of the nutrients your plants require, which will reduce fertilizer requirements. A well-balanced soil is key to maintaining healthy plants and lawn. For more information on the benefits and use of various soil amendments, check with your local OSU Extension office for a copy of EC 1561, "Improving Garden Soils with Organic Matter."

3. **Lawns.** Grass requires more water and maintenance than most other plants, so it is important to evaluate your landscape to see where grass is practical and functional. A lawn should be designed to serve multiple purposes: play areas, picnics, and pets.

   Steep slopes, sharp angles, and narrow driveways or sidewalk strips are difficult to water efficiently and usually are hard to mow. Consider ground covers, low-water-use plants, and mulches for these areas, or areas where foot traffic is infrequent or undesirable. Ground covers offer much of a lawn's neatness and uniformity with less maintenance.

   Keep these water-saving guidelines in mind when evaluating your lawn area:

   - Place the lawn where it will be the most useful.
   - Keep the physical layout of the grass area in easy-to-irrigate shapes.
   - Edge the lawn's perimeter so that it is easier to mow.
   - Don't plant grass on steep slopes.
   - Consider placing beds of water-thirsty plants near the lawn so they benefit from additional water.
   - Consider letting your lawn go dormant; it will turn green again with the autumn rains.

4. **The Right Plant in the Right Place.** Different plants need different amounts of water, sun, and shade to survive. After you have identified your microclimates,

you can select plants suited to these specific areas of your landscape.

How will you fit the appropriate plants into the microclimates you have identified? Are the plants you want actually suited to the weather conditions of the Willamette Valley? To help answer these questions, the U.S. Department of Agriculture (USDA) developed a rating system that divides the United States and Southern Canada into 11 zones.

Average Annual Minimum Temperature (°F)

3a	-35 to -40
3b	-30 to -35
4a	-25 to -30
4b	-20 to -25
5a	-15 to -20
5b	-10 to -15
6a	-5 to -10
6b	0 to -5
7a	5 to 0
7b	10 to 5
8a	15 to 10
8b	20 to 15
9a	25 to 20
9b	30 to 25

In addition to managing your yard's microclimates, look at creating watering zones in your landscape. Within each watering zone, all of the plants should have the same general watering needs, allowing you to give each plant only the amount of water it needs.

5. **Water Wisely.** The most common problem in the home landscape is over watering. When this is combined with poor soil quality it can reduce plant growth or even cause plant death, but more importantly, it's wasteful. A well-planned, well-designed, well-timed irrigation system saves money and promotes plant health by applying the right amount of water without excess. Soaker hoses or drip irrigation are the most water-efficient systems for trees and planting beds.

6. **The Use of Mulch.** Mulch comes in two forms, organic and inorganic. Both provide a protective layer of material that covers the soil surface. Unlike a soil amendment, mulch is not tilled into the soil. Organic mulches include aged manure, compost, bark, and wood chips. Inorganic mulches include gravel, river rock, and landscape cloth. Mulches are available in many shapes, sizes, and colors, so the kind of mulch you choose really depends on your preference. There are a number of benefits to using mulch, including the following:

   - Evaporation is a major source of water loss from the soil, and occurs because of the combined action of sun and wind on the soil surface. A layer of mulch can significantly reduce the amount of evaporation taking place and increase water available in the soil.
   - A mulch layer will reduce the impact of raindrops on the soil surface, decreasing the likelihood of a compacted layer, and allow water to infiltrate the soil to a greater depth, reducing soil erosion and runoff.
   - Organic mulches reduce soil absorption of heat by reflecting sunlight. Soils mulched with organic matter tend to maintain a more consistent temperature throughout the day, and year, compared with bare soil. By contrast, plastic mulches have a tendency to increase soil temperatures.
   - As mulch decomposes, nutrients are slowly released to the soil for plant use.

Mulch should be applied annually or as needed in the spring to conserve moisture and prevent weed seeds from sprouting or in the winter to protect soil from erosion and help plant roots retain warmth. Use 1 to 2 inches of compost, leaves, sawdust, or 2 to 4 inches of coarsely shredded bark or wood chips. If the mulch is too deep, water will have a difficult time reaching the plant roots.

7. **Keep Up the Maintenance.** Routine maintenance, such as pruning, pest control, and fertilization, will keep your plants healthy and your landscape at its peak. A healthy landscape is more resistant to summer heat, freezing, insects, and disease. The following are maintenance tips.

   - Aerate your lawn annually and dethatch as needed to ensure that the roots are receiving the right amount of water and oxygen.
   - Weeds compete with plants for nutrients, light, and water, so weed frequently by hoeing or pulling them by hand. Remember, a good layer of mulch will help with weed suppression.

Get your FREE Water-Efficient Plants guide today!

Please contact Debbie Martisak at 503-350-4084 (dmartisak@ci.beaverton.or.us) for a free copy of "Water-Efficient Plants for the Willamette Valley."

The Regional Water Providers Consortium provides a Weekly Watering Number at www.conserveh2o.org.

The Weekly Watering Number is the amount of water **in inches** that your lawn will need that week. You also can use the Weekly Watering Number for other types of plants, by using these general guidelines.

- **Shrubs:** 50 percent of the Weekly Watering Number
- **Perennials:** 50 percent of the Weekly Watering Number
- **Vegetables:** 75 percent of the Weekly Watering Number (new starts may require more water)
- **Trees:** Newly planted trees need regular watering the first couple of years, while established trees may need a deep soak or two in summer.

Be sure to check with your local garden center or landscape professional for more specific information on your plants' water needs.

Who should use the Weekly Watering Number?

Home gardeners and landscape professionals alike can use the Weekly Watering Number to fine-tune the amount they water each week.

Why does the Weekly Watering Number change each week?

The Weekly Watering Number changes with local weather conditions. So, in the cooler, wetter spring it tends to be lower, and in the hotter, drier summer it tends to be higher.

How do I use the Weekly Watering Number?

The key to efficient irrigation is to adjust your watering schedule as the weather changes throughout the irrigation season.

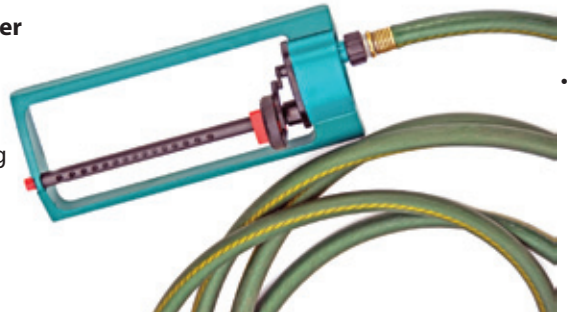
- Automatic Sprinkler Systems – First, determine your sprinkler's output, or how long it takes to water 1 inch of water. Then, set your base schedule and use the "water budget" or "percent adjust" feature to adjust your weekly watering schedule.
- Watering With a Hose or a Non-automated Sprinkler System – First, determine your sprinkler's output, or how long it takes to water 1 inch of water. Then, use the Weekly Watering Number as a guideline to manually adjust your watering duration or frequency.

Why a Zip Code-specific Weekly Watering Number?

By narrowing the number down to a specific Zip Code, the Consortium is able to better take into account any variations in weather and rainfall that occur within your specific area.

Where does the Weekly Watering Number come from?

The Consortium contracts with a weather forecasting service to provide a free weather forecast and Weekly Watering Number each Thursday.



Indoor Water Conservation

Check for Leaks

Nationally, leaks account for 14% of water use in the average household. Having a leak detection strategy potentially can lower your household's water and sewer bills while also saving hundreds to thousands of gallons of water per month.

Many times, the cost of detecting and repairing the leak are minimal ($5 to $20 per incident), while the potential savings to your water and sewer costs can be significant.

How to Find Leaks

If you've determined you have at least one leak, here are some ways to track it (or them) down. Note that after you've determined where the leak is, you may need help from a plumber or a repair specialist.

In the house

- Bathtubs and showers. Check the spout and shower head for dripping water. A new washer may be all that's needed. You may be able to do this repair yourself by unscrewing the faucet and replacing the washer with one of the same size. But before doing this repair, close your home's main shut-off valve.
- Toilets. Your toilet may have a silent leak, or your toilet may run sporadically without flushing. Drop a little food coloring in the tank. Wait about 10 minutes without flushing. If color appears in the bowl, you have a leak.
- Dishwasher. Water accumulated on the floor near the unit could be a sign of a leak.
- Refrigerator ice-making unit. A leak in the ice-making unit will cause excessive accumulations of ice in the freezer, and may produce small puddles of water under the refrigerator.
- Sinks and other faucets. Check for slower leaks by noting wetness in your sink basins. Make sure to look at every faucet in the house, even those that are rarely used.

In the basement or garage

- Hot water tank. The pressure valve release could be stuck. This valve most often is found near the top of the tank, and is usually a large brass fitting threaded to the tank. If it's not working properly, water will be leaking from it, dripping down the side of the tank and accumulating on the floor.
- Washing machine. If you see water on the floor near the machine, it's a sign of a possible leak.
- Water softener. A leak could be caused if your water softener is not recycling properly. The cycling process, regulated by a timer, often occurs between 2 a.m. and 4 a.m. You're likely to have a leak in this unit if you hear the sound of constantly running water.
- Humidifier. Water accumulated beneath the unit is a sign of a leak. Caution: If the overflow discharge is piped into a sewer or drainage line, you may not find any visual signs of a leak. Listen for the sound of running water. If it's continuous, there could be a leak.

- Boiler. Listen for the sound of running water. If it's continuous, and doesn't stop and start periodically, there could be an underground leak in your boiler system. Call your plumber.

Using Your Water Meter to Test for Leaks

Undetected leaks can be costly. Fortunately, your water meter can help you detect leaks.

How to locate your meter

Your water meter is probably located in front of your house, inside a concrete or plastic meter box that is set flush with the ground. Look for your meter behind the sidewalk at a side lot line near the street. If your home is on a corner lot, your water meter could be located either on the front or side street. Sometimes, meter boxes are not easily visible because of landscaping and other obstructions.

How to read your meter

Reading your water meter is like reading the odometer in your car. Read all the numbers from left to right that appear under the words "cubic feet."

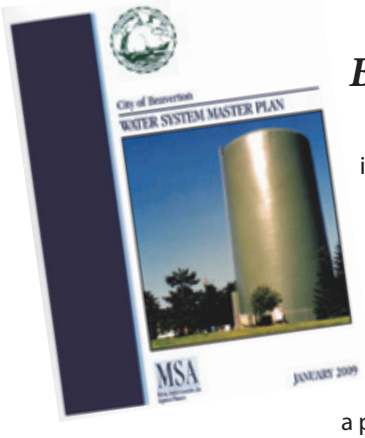
The first digit on the right represents 1 cubic foot. The second from the right represents 10 cubic feet. The third from the right (usually a different color) represents 100 cubic feet, or 1 ccf. One revolution of the meter sweep-hand equals 1 cubic foot, or 7.48 gallons.

How to use your meter to test for leaks

To use your meter to test for leaks, turn off all your faucets and water-using appliances (such as dish and clothes washers) and be sure no one in the household is using any water. Then go to your water meter and lift the cover of the meter dial. Note the position of the sweep-hand, or use a marker on the lens cover. If you have a typical water meter, there should be no movement of the dials on the meter.

Wait 20 to 30 minutes and check the sweep-hand location again. If the sweep-hand has moved, you probably have a leak somewhere in your system. If the small red diamond-shaped indicator on the face of the meter is moving, it also means you probably have a leak. Retest to be certain.

Then locate the leak by inspecting all the pipes, fixtures, and appliances that use water.



Beaverton's Water Master Plan

To predict future water use and the water system improvements (construction projects) required to serve new customer demand in the future, the City of Beaverton undertook a Water System Master Plan beginning in 2008. A master plan with periodic updates is required by Oregon law under Oregon Administrative Rules for Public Water Systems, Chapter 333, and Division 61. A master plan is a comprehensive analysis of the water system to project future water demand and to generate a plan of recommended water system facility improvements to provide for future system expansion. The Water Master Plan was completed in the spring of 2009 and adopted by the Beaverton City Council on July 13, 2009.

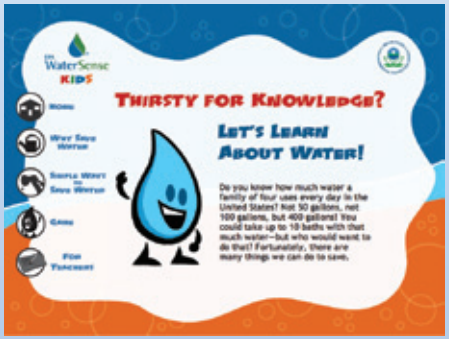
"WaterSense" Rebate Study

look for WaterSense Meets EPA Criteria

The EPA has been working on a labeling program called "WaterSense," which is similar to "Energy Star," except devices and appliances are rated for water efficiency not just energy efficiency. Three JWC agencies have programs in place that offer rebates for energy- and/or water-efficient appliances and devices. Beaverton water customers have expressed an interest in a rebate program similar to neighboring jurisdictions.

As part of the City's Sustainability Plan, the City is interested in implementing a rebate program. As JWC members, Beaverton and Hillsboro partnered and received a grant to complete a rebate feasibility study to determine the cost/benefits of each type of rebate to offer in a future program. A local consultant was hired to analyze our internal administrative costs, water savings from different rebate options, and budget and program recommendations. The project will include analyses on water savings for each type of potential WaterSense rebate with a comparison to the costs to distribute each rebate. Items to be analyzed for potential programs include:

- Bathroom sink faucets
- Flushing urinals
- High-efficiency toilets
- Pre-rinse spray valves
- Showerheads
- Landscape irrigation services
- Washing machines (Energy Star)

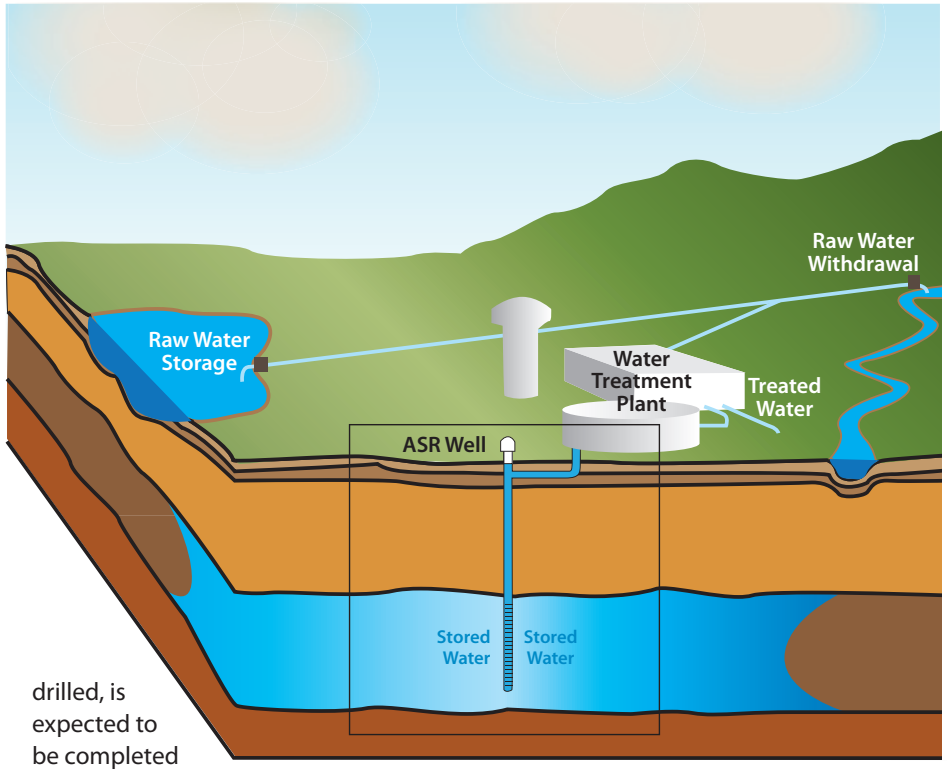


The "WaterSense" study is expected to be complete by July 2010 and will help determine recommendations to take to our governing bodies for future rebate program implementation.

City of Beaverton ASR

ASR – Aquifer Storage and Recovery: The City's drinking water program will continue to shave-off the amount of peak-season water supply into the City so as not to exceed the City-owned capacity of 18.75 mgd in the JWC water treatment plant and 14 mgd in the JWC transmission pipelines. The City is accomplishing this by using technology that provides drinking water during times of high use through ASR, a natural underground storage system. ASR involves pumping drinking water from the JWC water treatment plant (the same water our customers drink every day) into deep natural underground basalt formations, or aquifers, where it is stored for later use. The City will use ASR as an alternative way to increase summer water supply by up to 6 mgd during the summer of 2010.

During the summer of 2009, the City pumped out water stored in ASR Well Nos. 1, 2, and 4. ASR Well No. 3, though drilled, is expected to be completed for pumping by 2015. Using ASR, the City stored approximately 313 MG of drinking water in underground aquifers over the winter and spring of 2008-2009, with a total of 413 MG available (injected water plus carry-over storage from the previous year) for recovery. From June through October 2009, 158 MG of stored water and native groundwater were recovered (pumped into the water system) from the ASR wells to help meet summer customer demand. Stored water pumped out of the City's three ASR wells made up nearly 6 percent of the City's total annual drinking water distributed to customers in 2009.

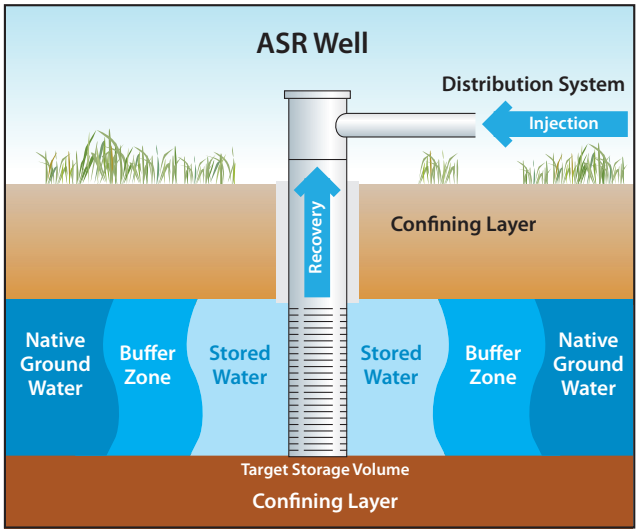


CH2M HILL graphic

To ensure that the water quality meets high state and federal standards, rigorous water quality testing and data collection are performed on a regular schedule on water recovered from the ASR wells. These water testing results also show how the aquifer responds to the injection storage and recovery of drinking water. Data collected on the City's ASR program are reported each year to the State Department of Human Services, Drinking Water Program. Since ASR has become an important part of the water supply system, Beaverton's drinking water during the summer consists of a mixture of groundwater from ASR wells and treated surface water originating from the upper Tualatin River.

ASR technology continues to enable the City to meet short-term water demand during the summer. Use of ASR also helps to delay the need to purchase new source water, expand water treatment, and build expensive above-ground storage reservoirs and new conveyance facilities. These factors represent large cost savings to the City in the long term and provide a more sustainable use of source water. As a result, the City has reduced its financial participation in many large JWC water supply projects since 1998 and consequently postponed the purchase of costly supply capacity.


Beaverton's ASR Well No. 4 (pump station inside house)



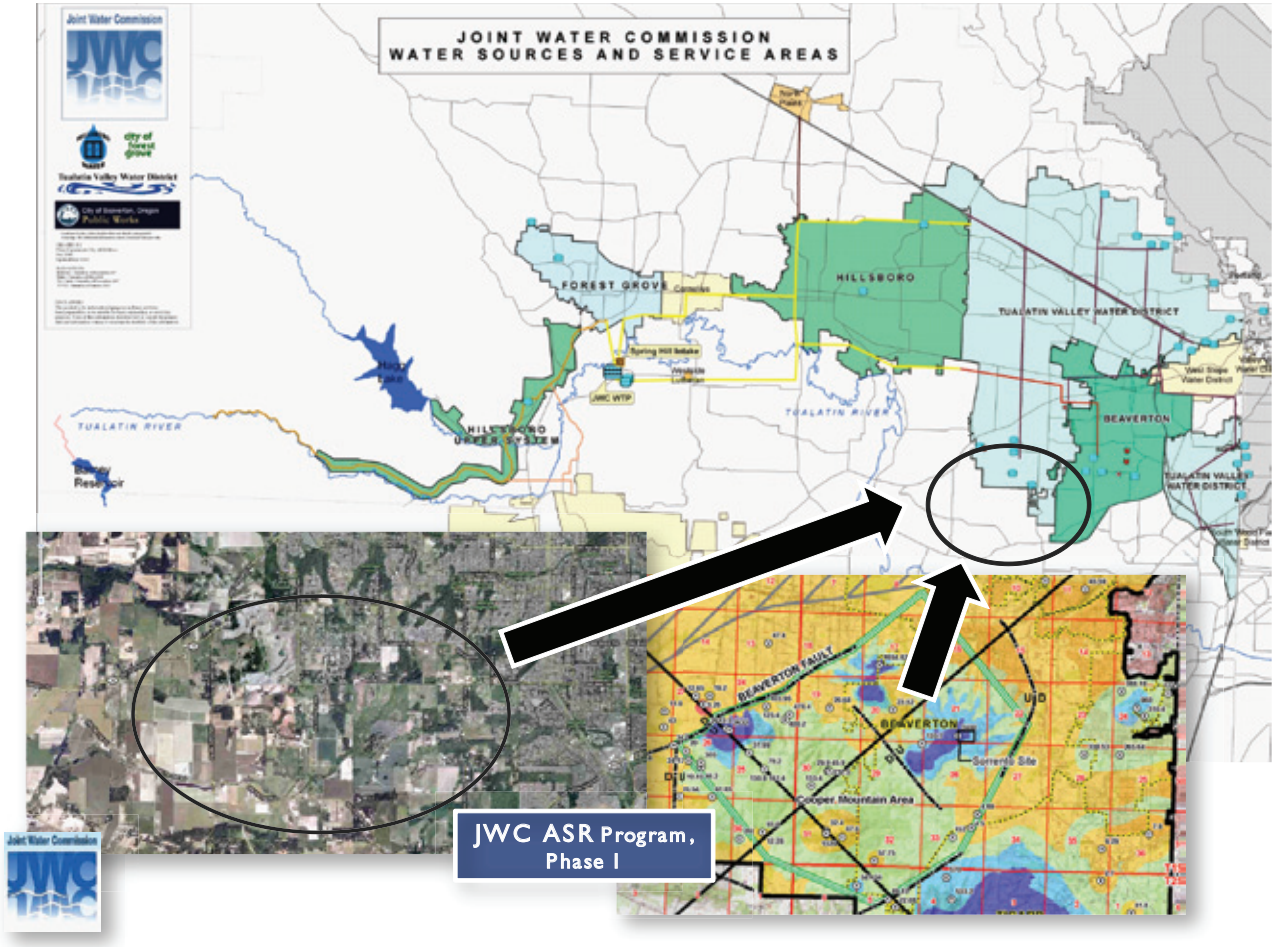
CH2M HILL graphic

Joint Water Commission (JWC) ASR Program

Serving up to 400,000 people, the JWC is the largest supplier of drinking water in Washington County. In 2009, a comprehensive water supply master plan was completed. One future water supply option recommended in the report is to develop a 16-well field of ASR wells on Cooper Mountain. Although, the master plan identified several areas of potential ASR development, this initial project will focus primarily on the Cooper Mountain area as the most likely area to provide high-yield wells.

The JWC master plan ASR analyses showed that implementation of an ASR program by the JWC could have significant economic benefits by delaying future expansion of the existing water treatment plant and transmission system. Beginning in the summer of 2010, a year-long facilities and siting study will be conducted to identify the most likely locations and costs to provide the groundwater storage and pumping capacity being sought. A siting evaluation will be completed to select the best-suited locations to building pump stations to house the ASR wells.

The proposed ASR project is intended to investigate and evaluate up to three exploratory drilling sites in 2011 for future ASR wells in the Cooper Mountain area and develop alternative strategies for proceeding with ASR development and related infrastructure improvements.



Drinking Water Fluoridation

The City fluoridates our drinking water to improve the dental health of the consumers of Beaverton's water. The City's fluoridation system was completed, tested, and began service in mid-May 2004. Since then, the City's water has been fluoridated at a target level of 0.9 parts per million (ppm). Sodium fluoride is added to Beaverton's drinking water after it leaves the JWC water treatment plant and before entering the City for distribution. The City's fluoride feed facility employs sensitive instruments to measure and maintain the desired level of fluoride in the drinking water system. In addition, seven on-line electronic fluoride analyzers are situated in different locations throughout the City to monitor fluoride levels in the drinking water 24 hours a day.

Cross Connection Control Program

As a City of Beaverton customer, you expect your drinking water to be safe. We are committed to providing you the healthiest, highest quality water, but we need your help. The City has a cross connection control program as required by the Oregon Department of Human Services, Drinking Water Program, and the EPA.

Weed killers, pesticides, or fertilizers back-siphoned through sprinkler heads or from the ground (saturated by irrigation water) can contaminate water inside irrigation pipes. Without a backflow prevention assembly, a cross connection between plumbing that contains a harmful substance and a drinking water pipe could allow backflow of the harmful substance into your household plumbing or a public drinking water distribution main, where it could be consumed accidentally by you or other City water users. Protection of residential water systems can be accomplished by using a special backflow prevention valve (assembly or device) to prevent potential risk of contamination to the public supply as required by Oregon law.

When backflow occurs, water runs *backward* through your pipes and into the drinking water system. When this happens, the water flowing backward may contain something that could contaminate the drinking water supply.

Fortunately, there are many things you can do to help prevent contamination of the public water system due to backflow.

- **Irrigation systems:** Ensure an approved backflow assembly is installed, is in good working condition, and is tested annually.
- **Swimming pools and hot tubs:** Ensure that if a water hose is used to fill these units, it is protected with a hose bib vacuum breaker installed on the faucet.
- **Residential boilers:** Ensure an approved backflow assembly is installed, is in good working condition, and is tested annually.
- **Private wells:** Ensure that well systems are not connected to a public water system. If it is connected, it must have a backflow assembly at the meter, be in good working condition, and tested annually.

The Oregon Administrative Rules Chapter 333-61-070 regulates that a water purveyor shall carry out a cross connection control inspection program, discontinuing water service to premises that fail to install an approved backflow assembly where a cross connection or potential cross connection may exist. The City must ensure the required backflow assembly is tested on an annual basis by a certified testing company and to be paid for by the homeowner. For assistance or advice in choosing a backflow assembly or if you are not sure which water provider serves you, please contact Ben Rosales, Cross Connection Control Specialist, at 503-350-4042.

Thermal Expansion

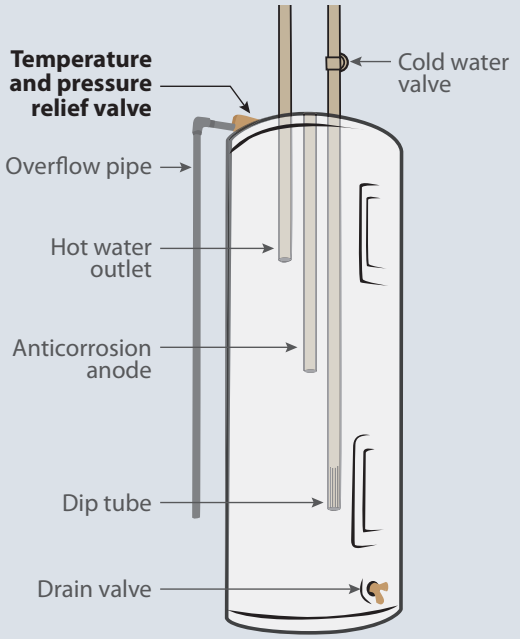
The City of Beaverton, as a public water provider, is required by the Oregon Department of Human Services to provide a notification about thermal expansion to all water users with water heaters.

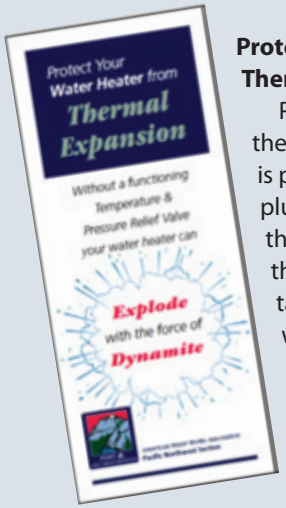
Most homes and businesses are supplied with hot water from an electric or gas heated tank. However, if not properly maintained, a water heater can become a safety hazard. Water expands in volume as its temperature rises. The extra volume caused by thermal expansion must go somewhere. If not, the heated water creates an increase in pressure.

The temperature and pressure in the water heater are reduced when hot water is withdrawn from a faucet and cold water enters the tank. The increase in pressure from thermal expansion also can be reduced by water flowing back into the public water system. When a check valve, pressure-reducing valve, or backflow preventer is installed in the service pipe, a "closed system" is created. Provisions must be made for thermal expansion in these cases.

What the Homeowner Should Do to Ensure Protection from Thermal Expansion

The homeowner or business owner should check to determine that an expansion tank and temperature and pressure relief valve (T & P valve) are in place. If there is any doubt, the homeowner or business owner should contact a licensed plumber. The T & P valve should be inspected periodically to ensure that is operating properly. Some T & P valves are equipped with a test lever. Manually lifting the lever unseats the valve, allowing water to discharge. If water continues to leak from the T & P valve after closing, the valve may need to be replaced. A drain line must be installed to avoid water damage and scalding injury when the valve operates. The T & P valve should be removed periodically and visually inspected for corrosion deposits and to ensure it has not been altered or repaired improperly. The above work can best be done by a licensed plumber.





Protection from Thermal Expansion

Protection from thermal expansion is provided in a plumbing system by the installation of a thermal expansion tank in the hot water system piping downstream of the hot water tank and a T & P valve at the top of the tank. The thermal expansion tank controls the increased pressure generated by the water heater. Check with a licensed plumber for other types of expansion devices that are approved in lieu of a thermal expansion tank.

For more information regarding thermal expansion, consult the American Water Works Association, Pacific Northwest Section brochure:

► *http://www.src4.org/ed/thermal-exp.pdf*

City Water Projects

The City annually completes water capital improvement projects to maintain, rehabilitate, and replace aging water infrastructure. Following are highlights of three such projects aimed at helping to ensure continued delivery of high quality potable water:

- **Reservoir Tank Cleaning Project.** The City contracted with a firm that used specially trained underwater divers to perform structural inspection and cleaning of four of the City's water reservoirs. All work was completed with the reservoirs full of water to ensure the continued availability of domestic/potable water and water to provide for firefighting.
- **Hall Boulevard Waterline Improvements Project (Hart Road to Denny Road).** The City hired a contractor to replace approximately 1,200 feet of deteriorated water pipe with new pipe ranging in size from 6 to 24 inches in diameter.
- **1st Street Utility Improvements Project (Lombard Avenue to Washington Street) and Washington Street (Farmington - 3rd Street).** Replacement of approximately 1,800 feet of deteriorated water pipe with new 8-inch-diameter water pipe. New fire hydrants and water services were installed as part of the project. All work was performed by City water crews.

Contractor scaling one of the City's reservoirs and preparing for entry

Placement of new 24-inch-diameter ductile iron pipe at the Hall/Denny Intersection

City crews installing new 8-inch-diameter ductile iron water pipe on 1st Avenue.

Important Information about Water and Your Health

Some people may be more vulnerable to contaminants in drinking water than the general population. Immune-compromised people—those with cancer undergoing chemotherapy, those who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants—can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. The U.S. Center for Disease Control (CDC) guidelines on appropriate means to lessen the risk of infection by cryptosporidium and other microbial contaminants are available from the Safe Drinking Water Hotline (1-800-426-4791).

City of Beaverton 2009 Water Quality Data

Major Sources: Joint Water Commission Water Treatment Plant, and Aquifer Storage and Recovery Wells

Regulated Contaminants

REGULATED CONTAMINANT	REGULATORY EXCEEDANCE	MEASURED CONCENTRATION		FEDERAL/STATE WATER QUALITY STANDARD/GOAL	LIKELY SOURCE OF CONTAMINATION
		RANGE	AVERAGE[a]		
MICROBIOLOGICAL AND GEOCHEMICAL PARAMETERS					
Total Coliform Bacteria	No	No positive detections in 2009	ND	No detection in 5% of monthly samples	Naturally present in the environment
Turbidity	No	0.03 to 0.04 NTU	0.035 NTU	0.3 NTU	Soil runoff
NUTRIENTS					
Nitrate	No	0.6 to 0.8 ppm	0.72 ppm	10 ppm	Natural erosion, fertilizers, septic tanks, and sewage
METALS AND MINERALS					
Fluoride (Water treatment plant and ASR wells)	No	ND to 0.7 ppm	0.65 ppm	4 ppm	Water treatment additive, fertilizers, and naturally occurring
Fluoride (City meter)	No	0.00 to 1.19ppm	0.84 ppm	4 ppm	
COPPER AND LEAD SAMPLING AT JWC PLANT AND ASR WELLS – NEXT TAP TESTING IN 2010					
Copper	No	ND	NA	1.3 ppm (Action Level)	Natural erosion and corrosion of household plumbing
Lead[b]	No	ND	NA	15 ppb (Action Level)	
RADIOLOGICAL – ASR WELLS ONLY					
Gross Alpha	No	ND	NA	15 pCi/L	Natural erosion
Gross Beta	No	ND	NA	50 pCi/L	
DISINFECTION BYPRODUCTS AND RESIDUALS WITHIN THE DISTRIBUTION SYSTEM					
Total Trihalomethanes	No	30.1 to 37.7 ppb[c]	33.9 ppb[c]	80 ppb	Byproduct of drinking water chlorination and disinfection
Total Haloacetic Acids	No	20.2 to 39.8 ppb[c]	27.5 ppb[c]	60 ppb	
Chlorine	No	0.58 to 0.78 ppm	0.71 ppm	4 ppm	

[a] Average calculations conservatively assume method detection limit value for each non-detect result.

[b] If present, elevated levels of lead can cause serious health problems, especially for pregnant women and young children. Lead in drinking water is primarily from materials and components associated with service lines and home plumbing. The City of Beaverton is responsible for providing high quality drinking water, but cannot control the variety of materials used in plumbing components. When your water has been sitting for several hours, you can minimize the potential for lead exposure by flushing your tap for 30 seconds to 2 minutes before using water for drinking or cooking. If you are concerned about lead in your drinking water, you may want to have your water tested. Information on lead in drinking water testing methods and steps you can take to minimize exposure are available from the Safe Drinking Water Hotline or at www.epa.gov/safewater/lead.

[c] Twenty samples were collected in 2009 from the distribution system and tested for trihalomethanes and haloacetic acids, which are byproducts of the disinfection process. The range in values represents the average values collected from multiple sites per quarter. The average value represents the rolling average calculated in the fourth quarter of 2009.

Unregulated Contaminants

CONTAMINANT	SECONDARY REGULATORY EXCEEDANCE	MEASURED CONCENTRATION		FEDERAL/ STATE WATER QUALITY STANDARD (MCL AND MRDL)	SOURCE OF CONTAMINATION
		RANGE	AVERAGE		
Radon *(ASR wells only)*	NA	496 to 609 pCi/L	553 pCi/L	No standard	Erosion from natural deposits
Sodium	No	9.1 to 12.3 ppm	11 ppm	20 ppm *(Advisory Level)*	Natural erosion and treatment additive
Chloride	No	3 to 8 ppm	6 ppm	250 ppm	Natural erosion and treatment additive
Sulfate	No	8 to 14 ppm	9.75 ppm	250 ppm	Common in water
Iron *(ASR wells only)*	No	ND to 140 ppb	NA	300 ppb	Geological rock formation
Total Dissolved Solids	No	71 to 127 ppm	96 ppm	500 ppm	Natural – depends on dissolved constituents
Odor *(ASR wells)*	No	No odor to 1 threshold	1threshold	3 threshold	Organic matter

Radon is a naturally occurring radioactive gas in the earth's crust. It is soluble in water and is tasteless, colorless and odorless. There is no federal regulation for radon levels in drinking water as of this printing. Radon was detected in water recovered from Beaverton's ASR wells at concentrations ranging from 496 picocuries per liter (pCi/L) to 609 pCi/L . The U.S. EPA is proposing a MCL of 300 pCi/L in drinking water with an alternative MCL of 4,000 pCi/L for systems that implement a Multi-Media Mitigation Program. Exposure to air transmitted radon over a long period of time may cause adverse health effects. If you are concerned about radon in the air in your home, it is easy and inexpensive to test it, and if radon in the air is over 4 pCi/L, there are simple ways to fix the problem. For additional information, you may call the Oregon Office of Radiation Protection Services at 503-731-4014. You may also contact EPA's Radon Hotline at 800-SOS-RADON.

Definitions

ND – Not detected

NTU – Nephelometric turbidity unit (measurement of cloudiness in water)

NA – Not applicable

Part Per Million (ppm)
One part per million corresponds to one penny in $10,000 or approximately 1 minute in 2 years. One part per million is equal to 1,000 ppb.

Part Per Billion (ppb)
One part per billion corresponds to one penny in $10,000,000,000 or approximately 1 second in 32,000 years.

Picocuries Per Liter (pCi/L)
Picocurie is a measurement of radioactivity.

Maximum Contaminant Level (MCL)
The highest level of a contaminant that is allowed in drinking water based on federal and state regulations.

Maximum Residual Disinfectant Level (MRDL)
The highest level of a disinfectant allowed in drinking water based on federal and state regulations.

Action Level
The concentration of a contaminant that, if exceeded, triggers treatment or other requirements, which a water system provider must follow based on federal and state regulations.

Additional Water Quality Information from the U.S. EPA

The sources of drinking water (both tap water and bottled water) include rivers, lakes, streams, ponds, reservoirs, springs, and wells. As water travels over the surface of the land or through the ground, it dissolves naturally occurring minerals and, in some cases, radioactive material, and can pick up substances resulting from the presence of animals or from human activity.

Contaminants that may be present in the water include:

- Microbial contaminants, such as cryptosporidium, viruses, and bacteria, which may come from sewage treatment plants, septic systems, agricultural livestock operations, and wildlife.
- Inorganic contaminants, such as salts and metals, which can be naturally occurring or result from urban storm runoff, industrial or domestic wastewater discharges, oil and gas production, mining, or farming.
- Pesticides and herbicides, which may come from a variety of sources such as agriculture, urban stormwater runoff, and residential uses.
- Organic chemical contaminants, including synthetic and volatile organic chemicals, which are by products of industrial processes and petroleum production, and also can come from gas stations, urban stormwater runoff, and septic systems.
- Radioactive contaminants, which can be naturally occurring or result from oil and gas production and mining activities.

To ensure that tap water is safe to drink, the EPA prescribes regulations that limit the amount of certain contaminants in water provided by public water systems. The U.S. Food and Drug Administration (FDA) regulations establish limits for contaminants in bottled water to provide the same protection for public health.

City of Beaverton 2009 Water Quality Report

Your Water Is Our First Priority

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